



DEVELOPMENT OF LOW-FAT YOGURT USING FAT REPLACER (INULIN)

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Master of Science in Dairy Science**

**Department of Dairy and Poultry Science
Faculty of Veterinary Medicine**

**Chattogram Veterinary and Animal Sciences University
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This is to certify that we have examined the above Master's thesis and have found that is complete and satisfactory in all respects, and that all revisions required by the thesis examination committee have been made

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LIST OF ABBREVIATIONS

°C	Degree Celsius
CVASU	Chattogram Veterinary and Animal Sciences University
DM	Dry matter
e.g.	Example given
<i>et al.</i>	And others
etc.	Etcetera
EPS	Exopolysaccharide(s)
LAB	Lactic Acid Bacteria
w/v	Weight/volume
BP	Blood Pressure
CVD	Cardio Vascular Disease
SMP	Skim Milk Powder
ml	Mililiter
PBS	Phosphate Buffer Saline
PRTC	Poultry Research and Training Centre
rpm	Rotation per minute
Spp.	Species
L	Litre
L.	Lactococcus

Abstract

The study was conducted to develop low-fat yogurt using skim milk in addition with Inulin (fat replacer) as well as to evaluate physicochemical and sensory properties of the developed low-fat yogurt. The influence of different levels of inulin on the quality of low-fat yogurt production was also investigated. Inulin was added to milk containing 0.2% of milk fat to give inulin levels of 1, 2 and 3% named T₁, T₂ and T₃. The experimental yogurts were compared with control yogurt produced from whole milk with 3.5% of milk fat. The total solids content of milk was standardized by adding skim milk powder to the experimental yogurt. The titratable acidity, pH, chemical composition and sensory evaluation were determined in the experimental yogurts at the 1st and 7th day. In the study moisture, protein and ash% of the samples showed significant difference between the treatments. T₂ sample had the highest moisture content 86.74% whereas T₃ being the lowest value 86.58%. The moisture% of T₃ was significantly better than the other samples. The ash content was recorded higher in our developed samples than our control samples, where highest value of ash content 1.02% was found in the T₁ sample followed by T₂ (0.95%) and T₃ (0.87%). The result showed that the ash% of T₁ was significantly better than that of other samples. The protein content was recorded higher in our developed samples than our control samples, where highest value of ash content 4.49% was found in the T₁ sample followed by T₃ (3.95%) and T₂ (3.94%). The result showed that the ash% of T₁ was significantly better than that of other samples. The addition of 1%, 2% and 3% inulin to yogurt was slightly affected by its pH and acidity during storage. Sensory properties of the yogurts were evaluated during storage (4°C temperature). The scores of aroma taste and overall acceptability showed no statistical significant difference between treatments. Sensory evaluation, the highest score of taste was recorded in control samples and T₃ samples (7.6) than other two T₁ and T₂ sample group. Among the four groups of sample, highest score of body and texture was given 8 in control samples followed by T₃ (7.4), T₁ (7.2) and T₂ (6.6). The addition of inulin didn't significantly affect pH and titratable acidity. In case of the organoleptic quality of three groups of low-fat yogurt, yogurt containing 3% inulin (T₃) had the highest score (7.5) in overall acceptability. Overall, the yogurt contain 1% of inulin (T₁) was almost similar in quality characteristics to control yogurt with whole milk. The better quality of low-fat yogurt can be made by using 3% of inulin as fat replacer as well as 1% of inulin can also be a better choice in case of high ash(1.02%) and protein(4.49%) with best benefit-cost ratio.

Keywords: Fat replacers, Inulin, Low-fat yogurt, Benefit-cost ratio.